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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
LY, CHEYNE D	

ART UNIT	PAPER NUMBER
1631	

DATE MAILED: 04/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/991,631	HAZAMA, MAKOTO	
	Examiner	Art Unit	
	Cheyne D Ly	1631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 January 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Applicants' arguments filed January 26, 2004 have been fully considered but they are not deemed to be persuasive. Rejections and/or objections not reiterated from previous office actions are hereby withdrawn. The following rejections and/or objections are either reiterated or newly applied. They constitute the complete set presently being applied to the instant application.

2. The addition of new claims 12-16 has been acknowledged.

3. Claims 1-16 are examined on the merits.

PRIORITY

4. Specific Applicant's argument via the MPEP rule 1.55(4) in regard to an English language translation of a non-English language foreign application is not required except when the application is involved in an interference, said argument has not been found to be persuasive as discussed below. Applicant is reminded that rule 1.55(4) states an English language translation of a non-English language foreign application is not required except when the application is involved in an interference (§ 1.630), when necessary to overcome the date of a reference relied upon by the examiner, or when specifically required by the examiner. If an English language translation is required, it must be filed together with a statement that the translation of the certified copy is accurate. As cited above, rule 1.55(4) cites three situations in the alternative when Applicant is required to provide an English language translation of a non-English language foreign application. Any one of the situations above provides sufficient grounds for the Examiner's request for an English language

translation of a non-English language foreign application in order to grant to a US nonprovisional application priority benefits to a foreign application.

5. However, an English language translation of the priority document is not required for the instant application due to the prior art documents being published before said priority document.

NEW MATTER UNDER 35 U.S.C. § 112, FIRST PARAGRAPH

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claims 1-16 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. NEW MATTER REJECTION.

8. This rejection is necessitated by Applicants amendments.

9. Specific to claim 1, line 2, the limitation of "actual nucleic acid sample" is considered to be new matter because said limitation has not been found in the instant specification. It is acknowledged that the limitation of "actual sample" is disclosed in the instant specification (page 4, line 22) and "nucleic acid" (page 1, line 6). However, the limitation of "actual nucleic acid sample" is different from either of "actual sample" or "nucleic acid" due to the limitations being different in scope. Claims 2-16 are rejected for being dependent from claim 1.

10. Specific to claim 1, lines 11-13, the limitation of "based on...according to predetermined group membership criteria" is considered to be new matter because said limitation has not been found in the instant specification. Claims 2-16 are rejected for being dependent from claim 1.

11. Specific to claim 1, line 15, the limitation of "according to a predetermined calculation method" is considered to be new matter because said limitation has not been found in the instant specification. Claims 2-16 are rejected for being dependent from claim 1.

12. Specific to claim 1, line 16-17, the limitation of "based on...according to predetermined base allocation criteria" is considered to be new matter because said limitation has not been found in the instant specification. Claims 2-16 are rejected for being dependent from claim 1.

13. Specific to claim 5, 3-4, the limitation of "the largest peak numbers" is considered to be new matter because said limitation is different from that of "largest fluorochrome signal" (page 6, line 6) and "largest signal" (page 7, line 12).

14. Specific to claims 6 and 7, line 3; the limitation of "median values" is considered to be new matter because said limitation has not been found in the instant specification.

15. Specific to claim 10, line 4, the limitation of "an optimized matrix" is considered to be new matter because said limitation has not been found in the instant specification.

16. Specific to claim 11, line 3, the limitation of "a set of conditions are predetermined", claim 12, lines 2-3, the limitation of "predetermined conditions includes...bases A, T, G, and C", claim 13, lines 2-3, the limitation of "predetermined conditions include the difference...between fluorochromes" are considered to be new matter because said

limitations have not been found in the instant specification. It acknowledged that the instant specification discloses "prescribed conditions" (page 5, lines 10-11), "migration conditions" (page 8, line 10), and 'various conditions" (page 8, lines 24, 25, and 27); said disclosures are different from that of predetermined conditions above.

17. Specific to claim 12, lines 2-3, the limitation of "the set of predetermined conditions...to bases A, T, C, and C" is considered to be new matter. It is acknowledged that the pointed to support (page 8, lines 28-30) discloses "Pa is the strongest for a peak of A(adenine),...and Pc is the strongest for C(cytosine)." Claim 12 recites the broader and less limited set of limitations than said pointed to support. The broadening of disclosure is considered to be new matter.

18. Specific to claim 13, lines 2-3, the limitation of "the set of predetermined conditions...fluorochromes" is considered to be new matter due to the specification discloses "the conditions to be limited are the following two points:" (page 8, line 27) wherein point "(2) [is] The difference in mobility or strength between fluorochromes" (page 9, lines 6-7). The specification does not disclose the difference in mobility or strength between fluorochromes being a set of predetermined condition.

19. Specific to claim 14, lines 1-2, and claim 15, line 1, the limitation of "the waveform signal is obtained from four detection parts with one detection part for each fluoroschrome" of claim 14, and "four fluorochromes are used" of claim 15 are considered to be new matter. It is acknowledged that the pointed to support (page 6, lines 17-18) discloses "an A (adenine) group..in the BigDye terminator." Claim 14 and 15 recite the broader and less limited set of

limitations than said the pointed to support. The broadening of disclosure is considered to be new matter.

20. Specific to claim 16, lines 1-2, the limitation of "peaks having abnormal signal strengths are eliminated" is considered to be new matter. It is acknowledged that the instant specification discloses "fluorochromes...are eliminated as abnormality" which is different from the critical limitation "peaks having abnormal signal strengths are eliminated. The instant specification does not disclose abnormal signal strengths being used as criteria eliminating peaks, but only "peaks thereof are eliminated as abnormality."

CLAIM REJECTIONS - 35 U.S.C. § 112, SECOND PARAGRAPH

21. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

22. Claims 1-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

23. This rejection is necessitated by Applicants amendments.

24. Specific to claim 1, lines 2 and 7, said claim recites a method of obtaining a matrix value for an actual nucleic acid sample in line 2, while, line 7, recites "the matrix transformation from the actual sample migration" which cause claim 1 to be vague and indefinite. Claim 1 is unclear as to whether the method is directed to an actual nucleic acid sample or a generic actual sample. Therefore, claim 1 is unclear as to whether the actual nucleic acid sample or actual sample, generically defined, is controlling the metes and bounds of the instant claimed invention. Claims 2-16 are rejected for being dependent from claim 1.

CLAIM REJECTIONS - 35 USC § 103

25. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

26. Claims 1-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Robertson et al. (US Patent No. 4,833,332) taken with Schiemenz et al. (US 5,834,972 A) in view of Anderson (US 5,098,536 A).

27. This rejection is maintained with respect to claim 1-11, as recited in the previous office action mailed August 26, 2003. The instant rejection has been extended to new claims 12-16.

28. This rejection is necessitated by Applicants amendments.

RESPONSE TO ARGUMENT

29. Applicant presents argument of Robertson et al. does not disclose the limitation of calculating a matrix value for obtaining emission strength from detected signal strength or calculating. Schiemenz et al. does not remedy the deficiencies of Robertson because Schiemenz concerns a matrix for signal amplification, not signal correction; and does not provide any incentive to modify a detected signal using matrix transformation to obtain an emitted signal, as recited in the present claims. Applicant's arguments have been fully considered and found to be unpersuasive.

30. Specific to Applicant's argument of Robertson et al. does not disclose the limitation of calculating a matrix value for obtaining emission strength from detected signal strength or

calculating, Robertson et al. discloses a system for detecting the radiant energy emitted from different species, the means for ratio functions of the detector outputs, and the ratio being indicative of the identity of the species (Abstract etc.). Further, Schiemenz, Jr. et al. discloses a general method to signal amplification, and more particularly to an improved method and system having a configurable digital transformer in a hybrid matrix amplifier array (column 1, lines 5-9) which sufficiently motivates one of ordinary skill in the art combine disclosure of Robertson et al. and Schiemenz et al. The combination of Robertson et al. and Schiemenz et al. as a whole provides disclosure to the limitation of calculating a matrix value for obtaining emission strength from detected signal strength or calculating as recited below.

31. Specific to Schiemenz et al. does not remedy the deficiencies of Robertson because Schiemenz concerns a matrix for signal amplification, not signal correction, the Examiner has not been able to find the limitation "signal correction" in the instant claims, which Applicant asserts to overcome the disclosure of Robertson et al. and Schiemenz et al.

RESPONSE TO AMENDMENT

32. Specific to the limitation "emitted signal waveform" of claim 1, Robertson et al. discloses a system for detecting the radiant energy emitted from different species, the means for ratio functions of the detector outputs, and the ratio being indicative of the identity of the species (Abstract etc.).

33. Specific to claim 1 and the limitation of "based on...according to predetermined group membership criteria", step (3), undefined "calculation method", step (4), and undefined "allocation criteria", step (5), Robertson et al. discloses sequence determination (membership

of A, T, G, or C) based on predetermined value wavelength characteristics (signal strength) (column 5, lines 39-50 and column 15, lines 56-61).

34. Specific to the limitations of predetermined conditions of claims 12 and 13, Robertson et al. discloses under appropriate conditions, DNA sequence is inferred from reading the pattern of bands created by the radiolabel on the film (detection parts) in order of their appearance (mobility) in the four lanes from the bottom of the gel (column 9, lines 9-25).

RE-ITERATION OF REJECTION

35. Robertson, Jr. et al. discloses a method for sequence determination using a scanning fluorescent detection system wherein the signal is detected over a narrow range of wavelengths and the peak maxima should be spaced no closer than 2 nm (column 6, lines 44-59) and larger than system noise (column 13, lines 30-34), as in instant claim 1, step (1).

36. The said method comprises detecting signal from dye labeled terminators (column 9, lines 26-29) and wherein the signal is digital (column 12, lines 58-64 and Figures 2 and 3). "Four fluorescent dyes are used" (column 7, lines 41-42), as instant claims 14 and 15.

37. The method comprises modulating and ratioing the signals corresponding to the fluorescent energies to determine the identity of each species (base) (column 13, lines 20-34). Each nucleotide base is associated with a pair of peaks wherein the program analyzed the peaks to assign the DNA base identity of A, T, C, or G, as in instant claims 2, 3, 8, and 11.

38. After assigning the base identities of A, T, C, or G (column 15, lines 56-61), the program enters the upper data acquisition (column 15, lines 56-61), as in instant claim 5.

39. A weighted average of the two signals or the stronger of the two signals are used to determine a "peak" (column 15, lines 25-27). To distinguish closely spaced group of dyes, the center wavelength is evaluated (column 13, lines 39-44), as in instant claims 6 and 7.

40. The method Robertson, Jr. et al. is directed to the analysis of the first signal, second signal and third signal being indicative of the identity of each of the species (base) (claim 1). Further, if the current pair is the last point on the peak, the proceeds to determine the identity of the next base in the DNA sequence (column 15, lines 48-51), as in instant claim 9.

41. However, the method of Robertson, Jr. et al. does not comprise the step of performing a matrix transformation on a waveform signal or the step of eliminating peaks having irregular intervals.

42. Schiemenz, Jr. et al. discloses a method for transforming a plurality of digital input signals using a transformation matrix (column 4, lines 18-43), as in instant claim 1, step (6), and claim 10.

43. Anderson discloses digitized results in a plot with rough lines and poor peak resolution (abnormal), "it is difficult to determine whether some of the peaks actually represent the presence of separated molecular species or are in fact noise" (column 1, lines 47-54), and most of the background noise and baseline drift (irregular peak intervals) have been removed (eliminated) by the transformation (column 5, lines 1-3), as in instant claim 1, step (2), and claims 4 and 16.

44. Schiemenz, Jr. et al. discloses a general method to signal amplification, and more particularly to an improved method and system having a configurable digital transformer in a hybrid matrix amplifier array (column 1, lines 5-9). While, Anderson discloses a method for

improving signal-to-noise in electropherogram (digital signal) (Abstract et al.); and Robertson, Jr. et al. discloses a method of performing signal amplification via a PMT to generate digital signal for sequence determination (column 11, lines 1-36). An artisan of ordinary skill in the art at the time of the instant invention would have been motivated to partake the concept emphasized by Schiemenz, Jr. et al. for an improved method of analyzing digital signal via matrix transformation and by Anderson for a method for improving signal-to-noise in digital signal. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to practice the method of Robertson, Jr. et al. with a transformation matrix for sequence determination as taught by Schiemenz, Jr. et al. and improved signal to noise (removing irregular peak intervals) as taught by Anderson.

CONCLUSION

45. NO CLAIM IS ALLOWED.

46. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

47. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

48. Papers related to this application may be submitted to Technical Center 1600 by facsimile transmission. Papers should be faxed to Technical Center 1600 via the PTO Fax Center located in Crystal Mall 1. The faxing of such papers must conform with the notices published in the Official Gazette, 1096 OG 30 (November 15, 1988), 1156 OG 61 (November 16, 193), and 1157 OG 94 (December 28, 1993) (see 37 CFR § 1.6(d)). The CM1 Fax Center number is (703) 872-9306.

49. Any inquiry concerning this communication or earlier communications from the examiner should be directed to C. Dune Ly, whose telephone number is (571) 272-0716. The examiner can normally be reached on Monday-Friday from 8 A.M. to 4 P.M.

50. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Woodward, Ph.D., can be reached on (571) 272-0722.

51. Any inquiry of a general nature or relating to the status of this application should be directed to Legal Instruments Examiner, Tina Plunkett, whose telephone number is (571) 272-0549.

C. Dune Ly
4/19/04

Ardin H. Marschel 4/29/04
ARDIN H. MARSCHEL
PRIMARY EXAMINER